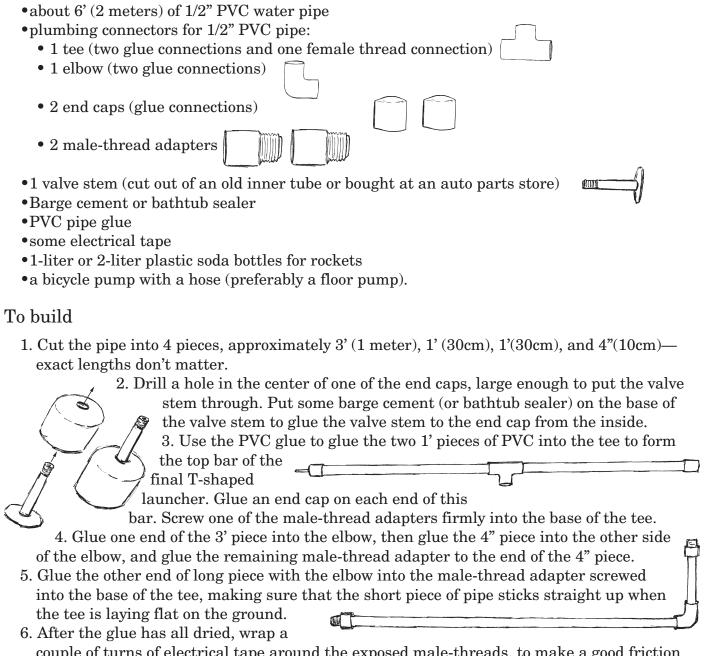
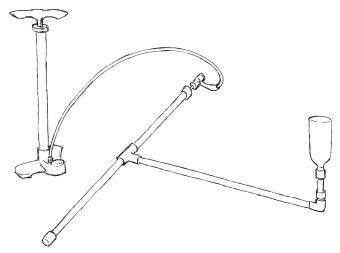
How to make a soda-bottle rocket launcher

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You need



couple of turns of electrical tape around the exposed male-threads, to make a good friction fit when a soda bottle is screwed on.



To use

- 1. Make sure the long pipe is firmly screwed into the base of the tee, and the short pipe sticks straight up when the tee is flat on the ground. (The launcher can be unscrewed at the tee for easier storage and carrying.)
- 2. Connect a bicycle pump to the valve stem.
- 3. Fill a soda bottle about 1/4 full of water.
- 4. Screw the water bottle onto the exposed male-thread adapter, trying not to spill too much of the water.
- 5. Pump the pump until the pressure in the bottle causes it to shoot off of the launcher (about 30 pounds/square inch).

Questions and Experiments (not just for kids)

- Where should we stand to be able to watch the rocket without looking into the sun?
- How can we estimate how high the rockets go? How could we measure it more precisely?
- Do larger or smaller soda bottles go higher?
- Does the launcher work with no water in the bottles?
- Does the launcher work if the bottles are filled completely full of water?
- What amount of water gives the highest flight?
- How could we redesign the launcher to get higher pressure in the bottles before they took off?
- How could we modify the soda bottles to get longer or higher flights?
- How can we estimate or measure the speed of the rocket as it leaves the launcher?

Safety Notes

Rockets go up 30 feet (10m), so do **not** launch the rockets indoors! The rockets are very light and pose no real hazard coming down, but they have a lot of water in them and are moving fast as they leave the launcher, and so observers should stand well back when the rocket is being pumped up. No one should start pumping until everyone else is several feet back. The rocket should always be shot straight up. Children under 10 should not use the rocket launcher without adult supervision.

There are reports on the web of soda-bottle rockets exploding, but these reports refer to a different launcher design, where the bottle is locked to the launcher. The friction-fit launcher used here will release before pressure builds up enough to be dangerous.